

GRADUATE RESEARCH SEMINAR SPEAKER SERIES

DEPARTMENT OF CHEMISTRY
PRESENTS

Dr. Stephen Leone

University of California, Berkeley

March 6, 2015, 3:30-5:00 p.m.

Main Building 0.212

“ATTOSECOND TRANSIENT ABSORPTION: FROM ATOMS TO BAND GAP SOLIDS”



Table-top laser high order harmonic generation is used to generate femtosecond and attosecond extreme ultraviolet (XUV) pulses to probe atomic and molecular dynamics by transient absorption spectroscopy. Characteristic transitions from inner shell states of atoms are measured. These x-ray transitions are sensitive to charge and electronic state and even exhibit significant shifts upon vibrational excitation. In gases, new investigations involve the development of methods to explore strong-field ionization resulting in coherent superpositions and timescales for autoionization. In the solid-state, ligand to metal charge transfer processes and band gap renormalization are probed for the first time, down to subfemtosecond timescales.